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EXAMINER

KOVALICK, VINCENT E

ART UNIT PAPER NUMBER

2677

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/993,413

Applicant(s)

YONEDA ET AL.

Examiner

Vincent E. Kovalick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,9-11 and 14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1,3,4,6,9-11 and 14 is/are rejected.
- 7) ☐ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to Applicant' Amendment dated April 29,2005 in response to USPTO Office Action dated January 26, 2005.

The amendments to claims 1 and 10, the cancellation of claims 2, 7-8 and 13-14 and the addition of new claim 14 has been noted and entered in the record.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. (USP 6,184,853) taken with Nagai et al. (USP 5,091,557) in view or Kanno et al. (USP 5,172,107) and further in view of Ozawa et al. (USP 6,501,454).
Relative to claims 1 and 6, Hebiguchi et al. **teaches** a method of driving a display device (col. 1, lines 15-67; col. 2, lines 1-67 and col. 3, lines1-15); Hebiguchi et al. further **teaches** a liquid crystal display (LCD) apparatus comprising: a liquid crystal display element composed of a liquid crystal layer and having a plurality of pixels arranged in a matrix form (col. 4, lines 30-63); and a driver for dividing one frame into at least four fields and interlace-scanning the at least four fields (col. 12, lines 1-12 and col. 13, lines 6-10).

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Hebiguchi et al. **does not teach** said liquid crystal layer including liquid crystal material having memory property and exhibiting a cholesteric phase at room temperate; and wherein said driver drives the respective fields composing one frame so that a scanning order of the fields is non-sequential at least once, and wherein said driver drives scanning lines by means of a driving waveform having a reset period for resetting a state of said liquid crystal material, a selection period for selecting a final display state of said liquid crystal material. and a maintaining period for establishing the state selected during the selection period.

Hebiguchi et al. teaches addresses the method and means for driving a matrix driving display device that displays one color by combining a plurality of basic colors.

Nagai et al. **teaches** liquid crystal properties (col. 2, lines 50-67 and col. 3, lines 1-17); Nagai et al. further **teaches** said LCD apparatus wherein the liquid crystals included in said LCD element have memory property (col. 9, lines 23-27); and further **teaches** said LCD apparatus wherein said liquid crystals show a cholesteric phase at room temperature (col. 15, lines 51-54).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to make available to the device as taught by Hebiguchi et al. the feature as taught by Nagai et al. in order to provide a LCD element with desirable memory properties thereby reducing the power consumption necessary to hold the said LCD element at a desires state.

Hebiguchi et al. taken with Nagai et al. **does not teach** ; said LCD wherein said driver drives the respective fields composing one frame so that a scanning order of the fields is non-sequential at least once, and wherein said driver drives scanning lines by means of a driving waveform having a reset period for resetting a state of said liquid crystal material, a selection period for

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selecting a final display state of said liquid crystal material. and a maintaining period for establishing the state selected during the selection period.

Hebiguchi et al. taken with Nagai et al. teaches the means for driving a LCD device wherein the LC material has desirable memory properties thereby reducing the power consumption necessary to hold the said LCD element at a desires state.

Kanno et al. **teaches** a LCD for scanning multiple fields in a frame in a non-sequential manner (col. 3, lines 23-68 and col. 4, lines 1-12). Kanno et al. further **teaches** said driver drives the respective fields composing one frame so that a scanning order of the fields is non-sequential at least once (col. 7, lines 34-41; col. 8, lines 3-23 and Figs. 3C and 4C).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al. taken with Nagai et al. the feature as taught by Kanno et al. in order to provide a sub-picture without line flicker through one-field skipping.

Hebiguchi et al. taken with Nagai et al. in view of Kanno et al. **does not teach** wherein said driver drives scanning lines by means of a driving waveform having a reset period for resetting a state of said liquid crystal material, a selection period for selecting a final display state of said liquid crystal material. and a maintaining period for establishing the state selected during the selection period.

Hebiguchi et al. taken with Nagai et al. in view of Kanno et al. teaches the means for driving a LCD device wherein the LC material has desirable memory properties thereby reducing the power consumption necessary to hold the said LCD element at a desires state.

Ozawa et al. **teaches** a LCD driving method for driving an apparatus using the LCD (col. 2, lines 32-65; col. 3, lines 1-65 and col. 4, lines 1-57); Ozawa et al. further **teaches** a LCD wherein

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said drive drives scanning lines by means of a driving waveform having a reset period for resetting a state of liquid crystals, a selection period (T3) for selecting a final display state of the liquid crystals, and a maintaining period (T4) for establishing the state selected at the selection period (col. 8, lines 37-67 and Fig. 4).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al. taken with Nagai et al. in view of Kanno et al. the feature as taught by Ozawa et al. in order to provide a driving method in which various types of display patterns can be displayed with a predetermined driving voltage margin being maintained and power consumption being prevented from increasing, (Ozawa et al. col. 2, lines 32-38).

Regarding claim 6 Hebiguchi et al. further **teaches** said LCD wherein the display element is constituted so that a plurality of liquid crystal layers are laminated, and the liquid crystal layers are scanned by said driver (col. 4, lines 30-63 and Fig. 1).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. as applied to claim 1 in item 3 hereinabove, and further in view of Tsuji et al. (USP 5,111,297).

Regarding claim 3, Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. **does not teach** a display apparatus wherein the drive drives the respective fields so that scanning order thereof is always discontinued.

Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. teaches the means for driving a LCD device wherein the LC material has desirable memory

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properties thereby reducing the power consumption necessary to hold the said LCD element at a desire state.

Tsuji et al. **teaches** a television receiver that performs scanning conversion(col. 2, lines 48-68 and col. 3, lines 1-62); Tsuji et al. further **teaches teach** a display apparatus wherein the drive drives the respective fields so that scanning order thereof is always non-sequential (col. 4, lines 59-68 and Fig. 4). It being understood that with switch 11, in Fig. 4 remaining closed, the circuit will remain in a non-sequential scanning order.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. the feature as taught by Tsuji et al. in order to provide a sub-picture without line flicker through field skipping.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. as applied to claim 1 in item 3 hereinabove, and further in view of Shiba et al. (USP 5,526,014).

Regarding claim 4, Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. **does not specifically teach** said LCD apparatus wherein said driver successively scans odd-numbered lines of the respective fields and successively scans even-numbered lines; though Hebiguchi et al. does teach the use of interlace-scanning (col. 13, lines 6-10).

Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. teaches the means for driving a LCD device wherein the LC material has desirable memory

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properties thereby reducing the power consumption necessary to hold the said LCD element at a desire state.

Shiba et al. **teaches** a semiconductor device for driving a LCD panel (col. 4, lines 36-67 and col. 5, lines 1-3); Shiba et al. further **teaches** said LCD apparatus wherein said driver successively scans odd-numbered lines of the respective fields and successively scans even-numbered lines (col. 2, lines 36-45).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to make available to the device as taught by Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. the feature as taught by Shiba et al. in order to provide the benefit of doubling the vertical resolution of the image in turn yielding a smoother displayed image.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. as applied to claim 1 in item 3 hereinabove, and further in view of Sandoe et al. (USP 6,243,061).

Relative to claim 9, Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. **does not teach** said LCD apparatus wherein the scanning of next field is started based on reset period end timing of one scanning line of the previous field.

Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. teaches the means for driving a LCD device wherein the LC material has desirable memory properties thereby reducing the power consumption necessary to hold the said LCD element at a desire state.

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Sandoe et al. **teaches** an active matrix display device and methods of driving such (col. 3, lines 19-67 and col. 4, lines 1-56); Sandoe et al. further **teaches** said LCD apparatus wherein the scanning of next field is started based on reset period end timing of one scanning line of the previous field (col. 8, lines 5-11).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to make available to the device as taught by Hebiguchi et al. taken with Kanno et al. the feature as taught by Sandoe et al. in order to generate the said reset signal indicating the start of scanning the next field to be scanned and set the proper voltages to begin the next selection period.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. as applied to claim 1 in item 3 hereinabove, and further in view of Ishizuka (USP 6,628,251)

Regarding claim 10, Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. **does not teach** said LCD apparatus wherein the driver drives scanning lines by means of a driving waveform having a field scanning period, said field scanning period comprising, in order, a reset period for resetting a state of liquid crystals, a selection period for selecting a final display state of the liquid crystals and a maintaining period for establishing the state selected at the selection period, said driver configured to start scanning of a next field based on an end timing of a reset period of a previous field.

Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. teaches the means for driving a LCD device wherein the LC material has desirable memory properties thereby reducing the power consumption necessary to hold the said LCD element at a desire state.

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Ishizuka **teaches** a method capable of establishing a high contrast display (col. 2, lines 36-67 and col. 3, lines 1-33); Ishizuka further **teaches** a display apparatus wherein the driver drives scanning lines by means of a driving waveform having a field scanning period, said field scanning period comprising, in order, a reset period for resetting a state of liquid crystals, a selection period for selecting a final display state of the liquid crystals and a maintaining period for establishing the state selected at the selection period, said driver configured to start scanning of a next field based on an end timing of a reset period of a previous field (col. 5, lines 42-55). It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. the feature as taught by Ishizuka in order to generate the said reset signal indicating the start of scanning the next field to be scanned and set the proper voltages to initiate the data signal selection process and then to maintain the signal until the next reset signal starting of the scanning of the next field.

8. Regarding claim 11, the remarks presented above in item 3 with regard to claims 6 apply equally to claim 11.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. as applied to claim 1 in item 3 hereinabove, and further in view of Onishi et al. (USP 5,814,378).

Regarding claim 14 Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. **does not teach** a LCD wherein said liquid crystal layer exhibits a transparent state unless the maintain period terminates.

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Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. teaches the means for driving a LCD device wherein the LC material has desirable memory properties thereby reducing the power consumption necessary to hold the said LCD element at a desire state.

Onishi et al. **teaches** a polymerizable compound and a liquid crystal display device using the same (col. 4, lines 44-67 and col. 5, lines 1-42); Onishi et al. further **teaches** a LCD wherein said liquid crystal layer exhibits a transparent state unless the maintain period terminate (col. 1, lines 20-29).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al taken with Nagai et al. in view of Kanno et al. and further in view of Ozawa et al. the feature as taught by Onishi et al. in order to provide to provide a LCD device which has an excellent response time and voltage transmittance characteristics and yet is sufficiently bright when no voltage is applied.

Allowable Subject Matter

10. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 5, the major difference between the teachings of the prior art of record (USP 6,184,853, Hebiguchi et al.; USP 5,172,107, Kanno et al. and USP 6,501,454, Ozawea et al.) is that said prior art of record **does not teach** the LCD apparatus wherein the driver scans the scanning lines according to the equation " $S = a + nk$ ", where "S" is the scanning lines to be

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driven; “a” is a variable number with an initial value of “one”; “n” is a variable number with an initial value of “zero”, and “k” is in integer of not less than 2.

Response to Amendment

11. Applicant's arguments filed April 29, 2005 have been fully considered but they are not persuasive.

Applicant's arguments center around the intended application of the instant invention which is not taught in the claims. The language of the claims is directed to the structure and the function of the physical elements that make up the invention. e.g., from claim 1, “a liquid crystal display apparatus comprising a liquid crystal display element composed of a liquid crystal layer and having a plurality of pixels arranged in a matrix form, said liquid crystal layer including liquid crystal material having a memory property and exhibiting a cholesteric phase at room temperature”

Further, regarding Applicant's remarks relative to “three different liquid crystal technologies” being recited in the prior art used in the 103 rejection of the various claims; much of the teachings in the claims are applicable across several display technologies. e.g. the pixel matrix structure of both LCD and plasma technology. The language of the claims does not teach combining various technologies.

12. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the argument that “Kanno is directed to solving an “image flow problem” as noted in column 7, lines 25-33. This image flow problem is manifested as a flickering and is due to low scanning rates, such as

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those required at low temperature for Kanno's ferroelectric liquid crystal material. In contrast, the present invention is directed to solving a "blackout problem as noted in paragraphs (0004-0006 of the present application") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

13. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation for rejection is found in the knowledge generally available to one of ordinary skill in the art.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent No.	6,414,666	Yamakawa et al.
U. S. Patent No.	5,754,153	Mizutome et al.
U. S. Patent No.	5,734,367	Tsuboyama et al.
U. S. Patent No.	5,726,679	Kanno et al.

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15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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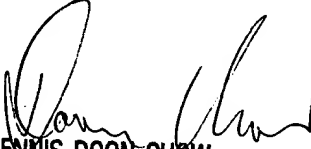
To Respond

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent E. Kovalick whose telephone number is 571-272-7669. The examiner can normally be reached on Monday-Thursday 7:30- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vincent E. Kovalick
August 16, 2005


DENNIS-DOON CHOW
PRIMARY EXAMINER